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# THE AMERICAN NATURALIST.

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## THE STONE AX IN VERMONT.

### I. CELTS.

BY PROFESSOR GEO. H. PERKINS.

THOSE specimens usually termed stone axes, for whatever purpose designed by their makers, may be grouped under the three heads, celt or ungrooved ax, notched ax and grooved ax. To the first group, the celts, by far the larger number of our ax-like implements, must be referred, and of this alone will the following pages treat, other varieties of the ax being deferred until a second paper. This term celt is convenient rather than accurately descriptive, embracing, as it usually does, a great variety of objects which undoubtedly were put to a variety of uses. We might easily set aside some of our celts as axes, others as chisels and still others as skin-dressers, or adzes, or hoes, but in most cases this definite assignment is wholly theoretical, and hence very possibly erroneous. Moreover, when we attempt to arrange a large series of these implements under the various groups, we soon discover numerous intermediate forms by which all may be united into a nearly unbroken series. There can be no doubt that there were certain uses for which some implements were especially intended, and other uses which others were to serve. Nor can there be any doubt that when occasion required, the same implement served for several sorts of work. For our present purpose it will be most convenient to call all our ungrooved axes celts.

As compared with other classes of implements celts are not uncommon in our Vermont collections, and they exhibit a

remarkable diversity in form, size, material and workmanship. Scarcely any two of them are precisely alike, and among them may be found European forms like some of those figured by Evans, Lubbock, Dawkins and others, as well as forms identical in all essential respects with specimens from various portions of the United States. Any one who studies stone implements from different countries must notice the prevalence of certain common types which are repeated in locality after locality, and in ancient and modern work alike.

Very likely the celt had its origin in the hammer stone. This, at first a well-worn pebble with no wrought surface, was, after a time, rubbed on another bit of stone until at one end a rude edge was obtained. When this was accomplished the hammer had become an ax. The one tool of its kind possessed by early man, it served many purposes, and gradually took upon itself a great variety of forms.

It was a simple and rude beginning, but it was one of the first steps in that far-reaching series by which man has risen from savagery to civilization.

Very rude celts, such as are sometimes found in other localities, are not common in Vermont collections. A pebble merely rubbed at one end until an edge was obtained is not usually the form found; far more commonly the entire surface is hammered, and not seldom smoothed and polished. Some of our best celts are not excelled by our finest specimens of any sort in elegance of form or finish. Almost all the more common kinds of rock found in Vermont appear in the celts, but some kinds are more often found than others, these are trap, greenstone, granite, mica schist and talcose schist; less common are quartzite, porphyry, serpentine, slate, etc. The hollow chisel, or gouge, is connected with the celt by certain peculiar forms which are sharpened like a chisel at one end while the other is hollowed.<sup>1</sup> So too we find gouges in which the hollow is very slight, and in some scarcely noticeable. There is a great diversity in the curvature of the edge of our celts, a perfectly straight edge being never found, and a close approximation to it is not common. In the great majority of our specimens the curvature is considerable, much more than is seen in a modern ax. As the celt is connected with the gouge by certain specimens, so it passes into the regularly

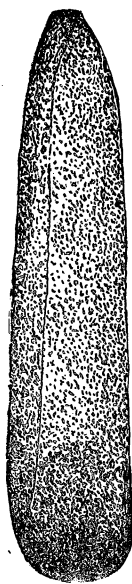
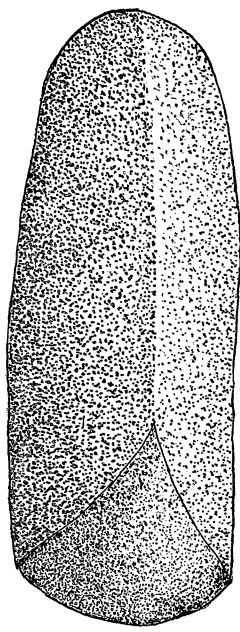
<sup>1</sup> See this journal, Vol. xv, p. 433, Fig. 6.

grooved ax through others. In some specimens there is merely a notch on each side, in others a very slight groove, and so on till we have the typical grooved ax. The form of some of the celts renders the supposition that they were furnished with a handle very improbable, but others undoubtedly were attached, some in one way some in another, to a wooden handle. Whether the prehistoric Vermonter ever adopted the Australian custom of imbedding the blunt end of his ax in a mass of pitch is not to be known, but the material for such a handle was at hand and may have been used.

The average celt of the Champlain valley is about five inches long or a little more, and half as wide. The extremes are found in little hand axes not more than three inches long, and large and sometimes clumsy specimens twelve inches long, and rarely more. In the thickness there is found little relation to other dimensions; some of the longest celts are thinner than many of the shorter ones. In most cases the thickness is greatest near the middle of the length, though sometimes the thickness increases from the edge to the other end. The edge is always carefully worked, however rude the rest of the specimen, and it rarely shows the effects of hard usage. Most of the specimens are hammered over the entire surface, and not seldom they are smoothed and polished, but some are left just as they were cleft from a large mass, and show no sign of the workman except at the edge. In many respects archæological specimens from New England are greatly surpassed by those from the mounds of the West and other localities, but some of our Vermont celts will bear comparison with similar objects from any part of this country or Europe. A very few copper celts have been found in Vermont, but none of any other material except stone, and of these latter only will this article treat.

Without pretending to establish a permanent classification of these objects, but only for present convenience, they will be considered in several groups, which will be determined chiefly by form. Our first group will include such as are linear in outline, the length being several times the width. Some of these are of large size and rude in finish, while others are carefully finished, and in a very few cases there is an attempt at carving in the form of one or more knobs or ridges. Fig. 1 illustrates this variety, and in this as in the other figures, the design is to exhibit an

average specimen of each class. The smallest celt of this class which I have seen is four and a half inches long, but most are much larger. A few of these linear celts are quite thin, in one case the material is common roofing slate of nearly uniform thickness and chisel-like form, and this implement could never have been intended for use as an ax, since the first blow would probably have shattered it. In these celts we find often each of the wide surfaces flat, but in others, and this is the case with a majority of all classes, one surface is flat or nearly so, while the

FIG. 1.  $\times \frac{1}{2}$ FIG. 2.  $\times \frac{1}{2}$ FIG. 3.  $\times \frac{1}{2}$ 

other is more or less strongly convex. The flat surface is usually more highly polished than the other.

In Fig. 2 we have a very unique example of the linear celt, both ends being sharpened and one transversely to the other. It is not common to find each end ground to an edge, but I have seen only this specimen in which the line of one edge crossed that of the other. It is a very finely made implement of compact basalt. It was found several feet below the surface in the subsoil, in Weybridge, by Mr. A. J. Stowe. It is nearly six inches long and about one inch in greatest width.

Still another type of celt is shown in Fig. 3, which was found in the same locality. The usually flat surfaces are beveled from a median ridge, as shown in the figure, to the sides. The material is a greenish quartzite and the specimen is very well finished, though not as well as many. It is six and a half inches long, two and a half wide and rather more than one inch in thickness.

The second class of celts are quadrangular in outline. Some of these are large and rude, others small and well made, but as a class they are rude and apparently made for rough work. In some cases, however, they are not strong, but, as in case of the specimen shown in Fig. 4, the material is some sort of slate, and too brittle for other than light work. Much larger specimens of this sort than that shown in Fig. 4, which is only four inches long, occur. One of these is of bluish serpentine, and was polished over the entire surface, although it was not worked smooth, and hence retains the irregularities made by the cleavage. It is nine inches long and more than four wide.

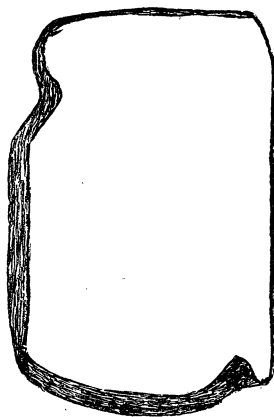


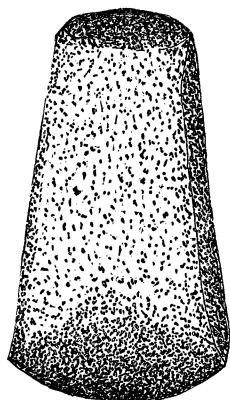
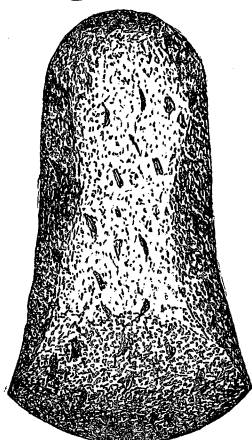
Fig. 4.  $\times \frac{1}{2}$

On page 433 of Volume xv of this journal, figure 6, is shown a specimen which illustrates the general form of the typical celt of this class, only substituting for the concave end an edge like the upper one in the figure. Very many are ground to an edge at each end, and these are much more carefully made than others which have but one edge.

Fig. 5 shows a type of our third class of celts, those which are quadrangular in outline but narrower at one end than the other, and the narrow end, if there is but one edge, is always that which is blunt. Often in celts of this form each end is brought to an edge, as in the case of Fig. 5, though this is less common than in celts of the second class. These celts are mostly very nicely made and of handsome material, and often beautifully polished. Some of them resemble closely the small celts found in the Swiss lakes. For the most part they are not of large size, averaging, perhaps, three or four inches in length. In none of our stone implements do we find

more beautiful specimens of ancient workmanship than in these celts, some of which, made from a compact, fine-grained serpentine of richly shaded green, are most elegant objects.

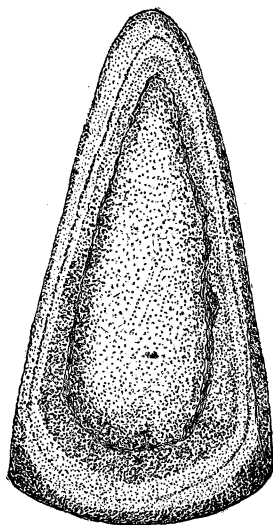
There are beds of this handsome material in several localities in the State, and it is remarkable that no objects made from it have been found except some of the celts. Most of the celts of the second and third groups are much wider than thick, but a few are either cylindrical or quadrangular in cross-section. The globular form seen in celts from other localities never appears in Vermont. Our celts appear to have been mainly worked from pieces split from larger masses rather than as in some places from pebbles. A form of celt which may be regarded as a modifica-

FIG. 5.  $\times \frac{1}{2}$ FIG. 6.  $\times \frac{1}{2}$ 

tion of that shown in Fig. 5 is shown in Fig. 6. This is obviously a hand ax, and although made from porphyry is finely smoothed and polished. Possibly this is one of those specimens of which Lafiteau speaks when he says that they were not finished during a single lifetime, but were handed down as heirlooms to be highly valued. Certainly no short time would be sufficient for the manufacture of so perfect an implement from so hard a stone. This specimen is four and a half inches in length and two and a half in width across the edge. In cross-section it is oval.

Celts of our fourth class are triangular, as is that shown in Fig. 7. Some of these are rude, others finely wrought. The specimen figured is a very beautiful example of this type of celt. It is made of dark brown clay-ironstone marked by a band of

lighter shade. It is very smooth, and the edge is unusually sharp. Both surfaces are quite flat. It is nearly five inches long and three across the edge. Celts of this form are less common than those of the other classes, and are usually of medium size and of hard, compact material, such as quartz, of which several are made, or porphyry. They are almost always made with great care, and even those of granular quartz are polished about the edge and sometimes over the entire surface. As any collector of stone implements will readily believe, there are many celts in our Vermont collections which do not clearly come within any one of the above groups, but are intermediate in their character. Nevertheless there are very few which cannot be placed in one or another of the four classes with sufficient accuracy for a general description. It is rather remarkable that so few of our celts show broken or worn edges. Some of them do indeed bear abundant evidence of severe service, but most have sharp even edges as if only just from the maker's hand. Either the larger part of these implements were skin-dressers, fleshers and the like, as doubtless some of them were, or if used for any work that broke or defaced the edge, they were very promptly repaired, and that this was sometimes done is familiar to every collector. The shape or bevel of the edge is by no means uniform. In some of our specimens the angle inclosing the edge is very large, and the bevel abrupt and short, as in many of our modern tools used by iron workers, while in others it is less abrupt, and in most quite like the edge of our modern ax, for which at best the celt could have been only a very indifferent substitute, although as a fleshier or skinning knife or scraper some of the forms may very well have served most excellently.

FIG. 7.  $\times \frac{1}{2}$